Hrdlička (A)

AN ANOMALOUS ULNA—SUPRA-CAPITAL FORAMEN

A NEW JOINT-FORMATION

BY

ALEŠ HRDLIČKA

(With two Plates)

(From the American Anthropologist (N. S.), Vol. 1, April and July, 1899)

NEW YORK
G. P. PUTNAM'S SONS
1899

AN ANOMALOUS ULNA—SUPRA-CAPITAL FORAMEN

BY

ALEŠ HRDLIČKA

AN ANOMALOUS ULNA—SUPRA-CAPITAL FORAMEN

By ALEŠ HRDLIČKA

The bone here described was found by the writer in a burial cave in the Sierra Madre, in Chihuahua, Mexico.[1] This large *cueva de los muertos*, which was made by river action in very ancient time, is situated about four miles southwestward from Guachochic, a place consisting of only a single rancho, the seat of the local *gobernador* of the Tarahumare Indians. It is a long day's journey by muleback to the southwest of the town of Carichic, which latter place is two days' *diligencia* journey west of the city of Chihuahua.

The cave is situated in the picturesque valley of the Arroyo de las Iglesias. It is a very large, widely open cavern, which, when I visited it, contained numberless human bones, both fragmentary and entire, partly covered with stones or earth, partly lying on the surface. A tradition is current that the cave was once full of mummified bodies; but the saltpeter digger came, perhaps also the hunter for buried gold, and, aided by rats and other animals, the mummies were dissociated and the bones strewn about. Then came the superstitious Indian from the neighborhood, who so dreads the harmful *muertos* that he cannot sleep in their neighborhood at night, hearing them singing and dancing, and he threw piles of stones on the bones until they were either broken or buried from sight. These facts have such a bearing on the specimens which I am to describe, that I was unable to obtain any other part of the skeleton to which the anomalous ulna belonged, and therefore cannot say whether the

[1] *On the Lumholtz-Hrdlička Expedition to Mexico under the Auspices of the American Museum of Natural History*; New York, March–July, 1898.

AN ANOMALOUS ULNA—SUPRA-CAPITAL FORAMEN

anomaly was unilateral or bilateral, or what irregularities of structure, if any, were shown by other parts of the skeleton.

The ethnological nature of the bones occurring in the cave mentioned is not yet fully determined. Undoubtedly the burial place is a very old one, for many of the bones, even those which were still buried deeply in the earth and could not have been denuded by animals, do not show even a trace of the dry, tough, mummified tissues which for centuries cling to bones in similar locations. However, the whole surrounding country is, and was, so far as any data or traditions go, occupied by the same tribe of Indians—the Tarahumare—hence in all probability the bones belong to the ancestors of these people.

The ulna here described lay bare on the nitrous earth, and attracted my attention by a peculiar large foramen situated just above its inferior extremity. The bone is apparently that of a male; it shows pronounced curvatures, as do many of the Indian ulnæ; it is strong, though not excessively so, and up to its head and neck it is entirely normal.

The carpal extremity of the bone shows the following conditions: The styloid process is short; the articular facet on the head, which is usually more or less semilunar in shape with the concavity toward the styloid process, is in this case irregularly circular, with the lateral width greater than the antero-posterior. A few millimetres below the head is situated a well developed, regular, spacious foramen in the bone. The foramen measures 8 mm. in height by 6 mm. in width; its base and internal side rest on the head and the neck of the ulna, while externally the opening is completed by a span of bone 2 mm. thick and 4 mm. broad in its narrowest part. The bone of the span is entirely normal; the proximal extremity of the bridge is continuous with the shaft of the bone and the interosseous ridge, respectively; while the distal extremity of the bridge, widening considerably, blends imperceptibly with the head of the ulna. There is absolutely no sign of any injury on the lower portion of the ulna.

There are no pronounced indications as to what function the anomalous foramen may have served. The inner walls of the opening are smooth ; internally on the shaft there are a low vertical ridge and a parallel shallow depression, as well as numerous small foramina for blood-vessels. The borders of the opening are quite smooth. The surrounding bone shows no trace of any groove or depression.

The interpretation of a large, well developed foramen in such a situation is difficult. Three theories suggest themselves as to its function. The foramen may have served for the transmission of an artery, or a tendon may have passed through it, or it may have lodged some sort of benign growth. No one of these theories is without possible objection. The borders of the foramen are hardly as smooth as they would be had they transmitted some erratic tendon or artery, and outside of its borders there is no trace of any groove such as a large artery or a tendon would produce. As to tumor, there is very little if any excavation or absorption of the walls in the opening, and no thickening of the bone.

The formation must have taken place very early in the life of the individual, as the form of the entire head of the ulna is affected. In all probability the anomaly of the foramen is due to congenital causes.

A NEW JOINT-FORMATION

BY

ALEŠ HRDLIČKA

A NEW JOINT-FORMATION

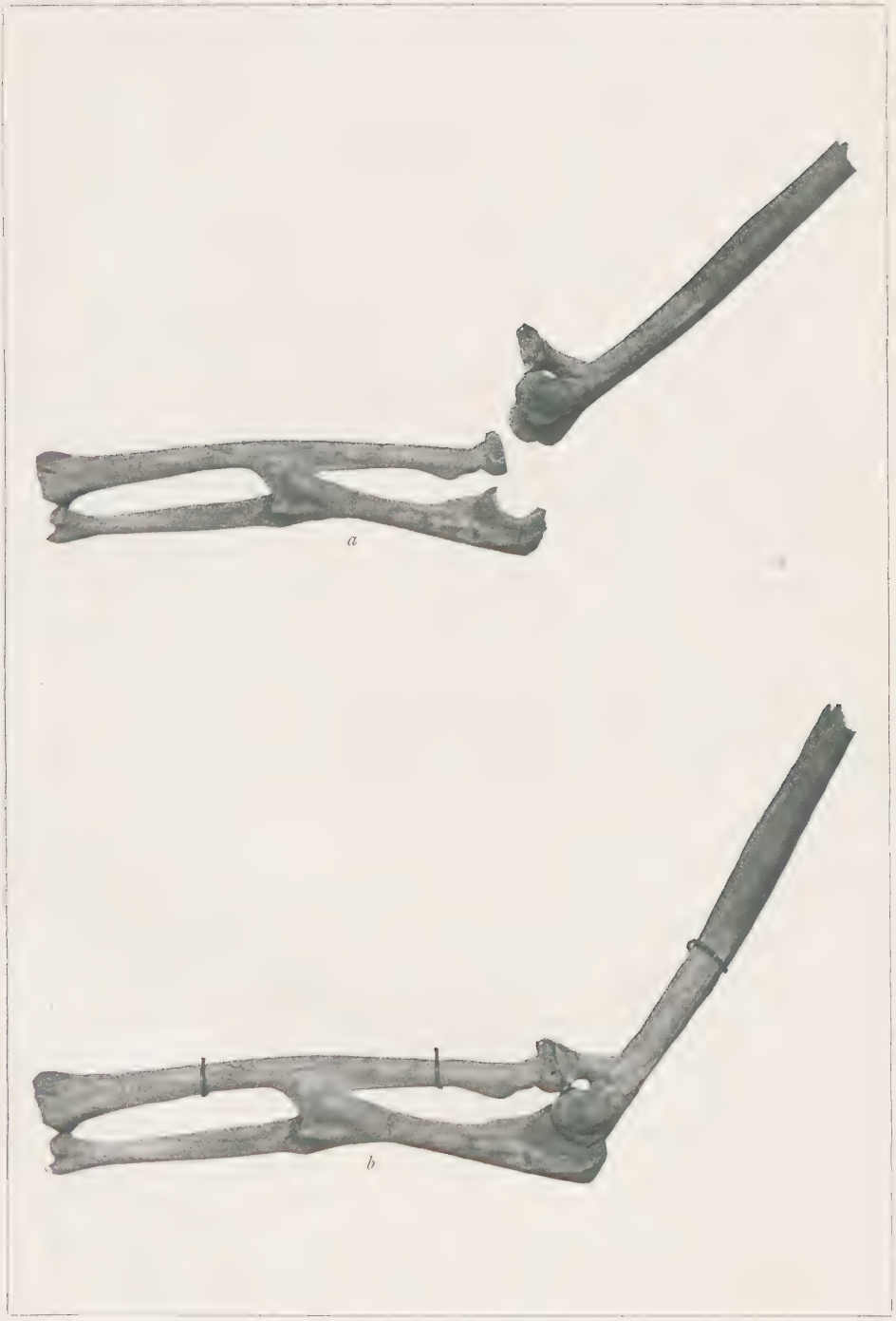
By ALEŠ HRDLIČKA

The specimen herein described shows in a very remarkable and beautiful way the great *vis medicatrix naturæ*. It consists of bones of the left arm and forearm, found by Mr Harlan I. Smith during his exploration of a prehistoric burial-place on the Fox farm at Mayslick, Kentucky. This exploration was conducted under the direction of the department of anthropology of the American Museum of Natural History. To the officers of the museum I am greatly indebted for the privilege of studying this interesting specimen, and for permission to publish the following description and the accompanying photographic illustration.

As will be seen from the plate (XXVII) the interest of the specimen lies mainly in the fact of a new joint-formation between the head of a dislocated radius and a bony process proceeding from the distal end of the humerus.

The genetic history of the new joint, from what we can observe in the bones, is as follows: Originally there were here the three normal, and in all probability already adult, bones of the arm and the forearm. Subsequently the ulna became fractured a little above the middle. This was probably an incomplete fracture, and at the same time there took place a complete forward dislocation of the head of the radius, but without either this bone or the humerus being injured. Neither the fracture nor the dislocation was reduced. The broken ulna became united by a small callus. More callus bone was thrown out around the spine of the proximal segment, which was inclined to and possibly at times touched the interosseous border of the radius, and eventually this part of the proximal segment became united to the radius by an osseous band nearly 3 cm. wide.

The head of the radius remained fully dislocated, and has un-



A NEW JOINT-FORMATION

a. The bones separated. *b*. The bones in position

dergone apparently no change whatever, unless it is a very slight lengthening. This supports the probability that the bones at the time of the fracture and dislocation were those of a fully developed adult. There is no indication that the humerus was in any way injured; nevertheless, at some time after the injury, there started from the anterior border, and partly also from the external surface of the humerus, immediately above the coronoid fossa, a bony process, which grew forward, downward, and slightly outward until it exactly met the free and, as already stated, unchanged head of the radius, forming with this head not an ankylosis, but a new, free joint. The mean length of this process is 3.1 cm.; its circumference at its middle is 3.5 cm.; the diameters of the joint are antero-posteriorly 2.2 cm., and laterally 2.4 cm. The process ends in an articular socket which is 7 mm. deep in the center, but as parts of the border are broken on one side, it might have been 1 mm. deeper. The surface of the socket presents in the middle an irregular row of large vascular perforations, but outside of these it is for the greater part smooth, and there can be no doubt that it was covered with synovium. The distal two-thirds of the process are entirely free from the humerus.

We have here, in brief, then, the following conditions: The normal and apparently uninjured humerus sends out through all the parts superposed a regular new formation—a veritable process—to meet, support, and form a joint with the head of the dislocated radius almost an inch and a half distant. Such formations are no doubt extremely rare in man. I have no personal knowledge of anything closely similar, and I am unable to find such a case described. Regenerations of bone to which the condition in the specimen is related, are much more frequent in the lower animals than in man.

As to the exciting cause of the new process of bone, it most probably was a moderate injury of either the ligaments or the periosteum of the distal end of the humerus.

The Knickerbocker Press, New York